

12 Response to SCC Incidents

12.1 Scope Statement

“Identify recommended actions to be taken by pipeline operators to facilitate response and assure appropriate remedial measures are implemented following an SCC-related incident.”

12.2 Regulatory Oversight in Post-SCC Incident Response

There are two separate agencies involved in the oversight of a pipeline accident:

- 1) National Transportation Safety Board (NTSB): The NTSB is an independent Federal agency charged by Congress with investigating significant accidents in pipelines, i.e. pipeline accidents involving a fatality or substantial property damage, and issuing safety recommendations aimed at preventing future accidents. It is not part of the Department of Transportation, nor organizationally affiliated with any of DOT's modal agencies. The Safety Board has no regulatory or enforcement powers. The Board derives its authority from 49 CFR.
- 2) Office of Pipeline Safety (OPS) : In 1968, Congress adopted the first comprehensive federal pipeline safety statute, the Natural Gas Pipeline Safety Act (NGPSA), in response to a tremendous increase in the nation's use of natural gas, the concurrent growth in population, and several well-publicized gas pipeline accidents. Eleven years later, in 1979, Congress passed a parallel regulatory program for hazardous liquid pipelines with passage of the Hazardous Liquid Pipeline Safety Act (HLPESA). Under both statutes ('the Acts'), the U. S. Department of Transportation (DOT) was granted primary regulatory authority to establish reporting and record-keeping requirements for the industries, to set technical standards for the design, construction, testing, and maintenance of pipeline facilities, and to enforce safety standards. This authority was delegated, in turn, to the Office of Pipeline Safety (OPS) in the Research and Special Programs Administration. By 1970, OPS had adopted core requirements for the gas pipeline industry, with regulations for liquefied natural gas following in 1980, interstate hazardous liquid in 1981, and intrastate hazardous liquid in 1985.

Generally, in the event of a significant pipeline accident, it is understood that the NTSB will take primary charge of the incident and accident report itself, while the OPS will take primary charge of oversight of the return-to-service of the pipeline. Normally representatives from both agencies respond to the scene of a pipeline rupture as soon as practical to ensure data collection and dissemination to the various technical disciplines involved.

12.3 Initial Report

The Accident Report form for liquid lines is available on-line from the OPS. Form No. 7000-1 (01-2001) “Accident Report – Hazardous Liquid Pipeline Systems,” which also has a companion

document: “Instructions for Form RSPA F 7000-1 (01-2001). Accident Report – Hazardous Liquid Pipe Systems.” Similarly, for gas lines there is Form 7100.2 (01-2002) “Incident Report-Gas Transmission and Gathering Systems” with its companion document: “Instructions for Form RSPA F 7100.2 (01-2002) Incident Report – Gas Transmission and Gathering Systems.”

These forms and companion instruction documents, compiled by the Operator, form the baseline evaluation for any incident. The intent of the initial notification, other than documentation for the records, is to gain adequate knowledge to determine the urgency for a regulatory representative or others to be dispatched to the incident site and to establish awareness level of the Operator. The on-line forms adequately cover the information requirements for this initial phase.

12.4 Site Security and Data Collection

The first priority of all is to ensure the site is totally secure and threats have been removed adequately to allow for special team investigations to proceed.

If SCC is suspected, the information and data examination should be broadened to ensure that all pertinent information about the incident is collected. In this case, the data collection efforts should be augmented to include relevant data to enable the evaluation of the particular problem, as well as to better enable oversight for return-to-service efforts. The following is recommended information to be gathered after the site is secure. This information is intended to be much more accurate and precise than initial report data, but still subject to change as a detailed evaluation continues. The operator should have qualified personnel to gather such data, especially if SCC is suspected, and regulatory oversight and collaboration is recommended at this stage. If no cause is readily apparent, note that the data collection for SCC may be prudent, especially for line segments that are considered susceptible to SCC.

1. Location of incident relative to nearest town.
2. Location of incident relative to the pipeline features.
3. Physical description of pipeline at Incident location:
<ul style="list-style-type: none"> • Diameter. • Wall thickness. • Grade of pipe. • Manufacturer of pipe. • Date of manufacture of pipe. • Type of Longitudinal weld. • Date of Construction of pipeline.
<ul style="list-style-type: none"> • Type of pipe coating. Include manufacturer/supplier, grade, original construction or replacement, date of installation.
<ul style="list-style-type: none"> • Type of coating joint system (if applicable). Include manufacturer/supplier, grade, original construction or replacement, date of installation.
4. Operating conditions of the pipeline at time of Incident:

<ul style="list-style-type: none"> • U/S Station discharge pressure immediately prior to Incident. • D/S Station discharge pressure immediately prior to Incident. • Estimated pipeline pressure at Incident site immediately prior to Incident. • Estimated throughput at Incident site immediately prior to Incident. • U/S Station discharge temperature immediately prior to Incident. • D/S Station discharge temperature immediately prior to Incident. • Estimated pipeline temperature at Incident site immediately prior to Incident. • Describe any other operating parameters that may have affected the integrity of the pipeline. (Unusual pressure/temperature cycles, extreme demand situations, valve closures, station shut downs, major customer usage variances, etc.)
5. Environmental conditions near the pipeline at time of Incident:
<ul style="list-style-type: none"> • Temperature • General weather description. Photos required. (Clear, Rain, Snow, Ice storm, etc.) • Topography description: <ul style="list-style-type: none"> ⇒ Lay of land in General Area. Photos required. (Flat, rolling hills, mountainous, lakebed, etc.) ⇒ Lay of land at Incident site. Photos required. (Hill top, valley, creek bottom, side hill, etc.) ⇒ Depiction of Incident site relative to the public. Photos required. (Remote – no populace, remote – near a farm house, remote – near several homes and a community center, in small town, near a small town, in a large city, near a large city, etc.) ⇒ Depiction of Incident site relative to Environmental issues. Photos required. (No significant threat, nearest stream 3 miles away, near the Kenai River, in Galveston Bay, etc.) • Type of soil (general characterization, e.g. sand, silt...) • pH of soil in the area: <ul style="list-style-type: none"> ⇒ Take readings with litmus paper and extract lab samples in uncontaminated soil as close to the origin as possible. ⇒ Take readings with litmus paper and extract lab samples at all four quadrants around the pipe. ⇒ Take readings with litmus paper and extract lab samples (four-quadrant) U/S and D/S of the origin. ⇒ Take readings with litmus paper and extract lab samples at several intervals on both sides of the pipe down at a depth equal to the bottom of the pipe. ⇒ Take steps to preserve the identity and integrity of the samples so that they may be further evaluated by a laboratory if deemed necessary. ⇒ Prepare sketch to show where all readings and samples were taken.
6. Physical description of the damage to human life.
7. Physical description of the damage to property. Photos required.
8. Physical description of the damage to the Environment. Photos required.
9. Physical description of the damage to the pipeline:
<ul style="list-style-type: none"> • Leak:

- ⇒ Location (Distance from an identified reference girth weld.)
- ⇒ Orientation (~ o'clock position looking D/S). Photos required.
- ⇒ Dimensions of leak feature including orientation. Sketch or rubbing desirable.
- ⇒ Caused from Internal corrosion/external corrosion?
- ⇒ Located in Girth weld/longitudinal seam?
- ⇒ Located in manufacturing defect?
- ⇒ Located In longitudinal/transverse crack?
- ⇒ Located in mechanical damage. Sketch or rubbing mandatory.
- ⇒ Other
- Rupture:
 - ⇒ Gaping Split (Major longitudinal opening in the pipe but still intact looking similar to a fish's mouth.) Photo required with a scaled reference attached.
 - Orientation of split.
 - Description of fracture surface.
 - Estimate of percent of wall thickness remaining at the time of failure.
 - Length of Split.
 - Maximum width of split.
 - Describe any physical anomalies present on the pipe surface or on the fracture surface at the origin of failure. Photos required.
 - Internal Corrosion
 - External corrosion
 - Mechanical damage – Gouge
 - Mechanical damage – Dent
 - Manufacturing defect
 - Girth welding defect
 - Longitudinal welding defect
 - Arc burn
 - Longitudinal crack
 - Longitudinal crack clusters
 - Transverse crack
 - Transverse crack clusters
 - Actions taken to preserve the integrity of the ruptured pipe as required for future metallurgical testing. Include copy of Protocol. Photos required.
 - Actions taken to preserve the "Chain of Custody". Include copy of Protocol. Photos required.
 - ⇒ Major pipeline failure:
 - Length of pipe that failed.
 - Length of pipe recovered.
 - Number of pieces of pipe recovered

- Map of the fracture path. Include orientation (direction of flow, o'clock position)
- Estimated length of pipe not recovered and a description of processes implemented to effect recovery.
- Describe any physical anomalies present on the pipe surface or on the fracture surface at, or near the origin of failure. Photos required.
 - Internal Corrosion
 - External corrosion
 - Mechanical damage – Gouge
 - Mechanical damage – Dent
 - Manufacturing defect
 - Girth welding defect
 - Longitudinal welding defect
 - Arc burn
 - Longitudinal crack
 - Longitudinal crack clusters
 - Transverse crack
 - Transverse crack clusters
- Actions taken to preserve the integrity of the ruptured pipe as required for future metallurgical testing. Include copy of Protocol. Photos required.
- Actions taken to preserve the "Chain of Custody". Include copy of Protocol. Photos required.

10. Protective Coating:

- Describe condition of the coating at or near the origin. Photos required.
 - ⇒ Bonded
 - ⇒ Disbonded
 - ⇒ Damaged
 - ⇒ Porous
- Describe the conditions that exist under the coating in the event it is disbonded or damaged. Photos required.
 - ⇒ Dry and clean
 - ⇒ Presence of iron oxide
 - ⇒ Wet
 - ⇒ Dry with calcareous build-up.
 - ⇒ Wet with calcareous build-up.
- Extract samples of uncontaminated materials found under disbonded or damaged coating. (contamination is from the release) Photos required:
 - ⇒ Extract lab samples from under the coating U/S of and as close as possible to the origin.
 - ⇒ Extract lab samples from under the coating D/S of and as close as possible to the origin.
 - ⇒ Extract lab samples from under the coating at other locations in the vicinity of the incident that might be useful to obtain a full understanding of all activities that have taken place.

<ul style="list-style-type: none"> ⇒ Take steps to preserve the identity and integrity of the samples so that they may be further evaluated by a laboratory if deemed necessary. ⇒ Prepare a sketch to show where all samples were taken. • Extract samples of coating materials found near the origin of failure. Photos required: <ul style="list-style-type: none"> ⇒ Extract coating lab samples U/S of and as close as possible to the origin. ⇒ Extract coating lab samples D/S of and as close as possible to the origin. ⇒ Extract coating samples at other locations in the vicinity of the incident that might be useful to obtain a full understanding of all activities that have taken place. ⇒ Take steps to preserve the identity and integrity of the samples so that they may be further evaluated by a laboratory if deemed necessary. ⇒ Prepare a sketch to show where all samples were taken.
11. Cathodic Protection:
<ul style="list-style-type: none"> • Evaluate the cathodic protection elements in place at and near the origin of failure: <ul style="list-style-type: none"> ⇒ Measure pipe-to soil potentials as close as possible U/S of the origin of failure. ⇒ Measure pipe-to soil potentials as close as possible D/S of the origin of failure. ⇒ Measure pipe-to soil potentials at other locations in the vicinity of the incident that might be useful to obtain a full understanding of all activities that have taken place. ⇒ Measure soil resistivities as close as possible U/S of the origin of failure. ⇒ Measure soil resistivities as close as possible D/S of the origin of failure. ⇒ Measure soil resistivities at other locations in the vicinity of the incident that might be useful to obtain a full understanding of all activities that have taken place. ⇒ Prepare a sketch to show where all readings were taken. • Describe the functionality of the closest CP elements U/S and D/S of the origin of failure: <ul style="list-style-type: none"> ⇒ Ground beds ⇒ Rectifiers ⇒ Anodes ⇒ Foreign line crossings ⇒ Other ⇒ Prepare a sketch to show where all descriptors above are located relative to the origin of failure.

12.5 Procedural Development

After the initial data collection and site evaluation, a written procedure to address the following steps should be developed:

- Interim Measures: Repair procedure; interim operational plan; safety considerations; communication plan and protocol
- Return to Service Plan Development: Evaluation of line segment for additional SCC; required metallurgical/geotechnical investigations and reporting; conformance with IM plan and protocols; requirements for additional ILI, direct examination and/or direct assessment.

This plan is summarized in a written report suitable for distribution to regulatory/public groups. Adjustments are made as required and the Return-to-Service Plan finalized.

- Incident Follow Through: Monitoring of performance and/or additional investigations as required; QA/QC plan and reporting requirements; review of all Engineering Evaluations.
- Incident Closeout: Final delivery of the incident evaluation report with associated Engineering and laboratory evaluations; adjustment to the Operations Manual as required; adjustment to linewide SCC threat assessment as required; long-term communications plan.

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